

Abstract

Provided is a dye-sensitized solar cell having improved stability of safety and performance by employing a non-volatile molten salt which makes it possible to facilitate the control over the composition of gel electrolyte, simplify the working step during production and give an excellent conversion efficiency. The dye-sensitized solar cell comprises a transparent substrate, a transparent electrically-conductive membrane formed on the surface of the transparent substrate and an electrically-conductive substrate disposed opposed to the transparent electrically-conductive membrane and further comprises a porous semiconductor layer having a dye adsorbed thereto and an electrolyte provided interposed between the aforesaid transparent electrically-conductive membrane and the electrically-conductive substrate, wherein the electrolyte comprises a molten salt incorporated in a network structure obtained by crosslinking at least one kind of Compound A having isocyanate group with at least one kind of Compound B having amino group to solve the aforesaid problems. Or the electrolyte comprises a molten salt incorporated in a network structure obtained by crosslinking at least one kind of Compound A having isocyanate group with at least one kind of Compound C having carboxyl group and/or hydroxyl group, at least one of Compound A and Compound C constituting the

electrolyte has a polymer structure having a molecular weight of from 500 to 100,000 and a part or whole of the polymer structure comprises one or more selected from the group consisting of polyether, polyester, polycaprolactone, polysiloxane, polyvinylpyrrolidone, polycarbonate and polyphosphazene.